

RESPONSE TO OFFICE ACTION  
DATED JUNE 4, 2007

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**REMARKS**

This is in response to the Office Action dated June 4, 2007. Reconsideration is respectfully requested.

Status of Claims

Claims 1-16, 32 and 33 are pending and all are rejected. Claims 1-8, 32 and 33 are rejected as obvious over U.S. Patent No. 5,615,717 to Cheiky in view of U.S. Patent No. 4,247,811 to Findl. Claims 9 and 10 are rejected as obvious over Cheiky in view of Findl and further in view of U.S. Patent No. 5,806,928 to Rowan, Sr. et al. Claims 11-14 are rejected as obvious over Cheiky in view of Findl and further in view of U.S. Patent No. 4,283,467 to Gutlich et al. Claims 15 and 16 are rejected as obvious over Cheiky in view of Findl and Gutlich et al and further in view of Rowan, Sr. et al.

Support for Claim Amendments

Applicants have amended the claims to recite that the electric battery is a lead-acid type and that the fluid supplied to its cells is water. Support for these amendments may be found throughout the specification, for example, on page 1, lines 18-21; page 3, lines 1-7; and page 8, lines 1-8.

Canceled Claims

Claims 9, 10, 15 and 16 are hereby canceled without prejudice, thereby rendering rejections of these claims moot.

The Traversal

Applicant respectfully traverses the rejections, contending that the cited references fail to meet the requirements necessary to establish a *prima facie* case of obviousness. Applicant's position is explained in detail in the arguments presented below.

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Claim 1

Claim 1 as amended, recites, in relevant part, a lead-acid type electrical battery that is connectable to a water source for replenishing water in the cells of the battery. The battery has a water conduit, a valve system and an electronic controller which controls the valves to allow water flow to cells in need of replenishment, and halt the flow of water to the cells having adequate water. The battery has an electrolyte level sensor which communicates with the controller via electronic signals indicative of the electrolyte level in the cells thereby providing information to the controller and allowing it to control flow of water to the cells as required.

Claim 1 is rejected as obvious over Cheiky and Findl. The Examiner admits that Cheiky does not teach an electrolyte level sensor, and relies on Findl for this teaching, stating that it would be obvious to use the sensor in Findl in the battery of Cheiky to ensure that the electrolyte level is above a minimum level to ensure safety. Applicant respectfully disagrees. The use of an electrolyte level sensor in Cheiky is totally inappropriate because Cheiky discloses a metal-air battery. Unlike the lead-acid battery recited in Claim 1, metal-air batteries have no defined electrolyte levels whatsoever. In fact, the battery cells 28 disclosed in Cheiky are inclined at an angle and have drain holes 36 in their bases leading to a common collection tank (component 16 in Figure 1). The presence of drain holes in the cells precludes the formation of liquid levels in the cells. The air-metal battery disclosed in Cheiky, also known as an "electrolyte starved battery", is radically different in design and operation from the lead-acid battery of Claim 1 in that it depends upon a flow of electrolyte through the cells for its operation, and not a substantially static volume of electrolyte in which plates are immersed as with the lead-acid battery.

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In a metal-air battery the anode comprises a metal, for example, zinc, and the cathode is atmospheric air. The metal oxidizes as the battery discharges. In large, metal-air batteries there are two ways to replenish the discharged metal anodes. One may physically replace the anodes, or recharge the anodes using a strongly conductive electrolyte solution. This is how the Cheiky battery is recharged. The electrolyte solution is pumped into each cell 28 where it encounters electrolyte absorbers 96 and 98 (see Figure 7), such as blotter paper which supply electrolyte to the electrode as described at column 7, lines 60-67. The excess electrolyte not absorbed by the absorbers is permitted to drain out of the cell as described at column 8, lines 15-19 and lines 64-67. The charging process must be continuous to maintain the cells' reaction, and requires the distribution system disclosed in Cheiky to distribute the electrolyte to the cells individually and sequentially to avoid short-circuiting the cells with different electrical potential. Cheiky, at column 5, lines 28-57, explains in detail how the electrolyte is distributed to avoid shunt currents between the cells.

The metal-air battery disclosed in Cheiky, thus, has no need of an electrolyte level sensor because it has no electrolyte levels in its cells. Proper operation requires that the electrolyte be absorbed in pads adjacent to the anodes in each cell and the excess electrolyte not absorbed drain out, the cells being angularly oriented and having drain holes to facilitate removal of the electrolyte from the cells. One would not be motivated to add an electrolyte level sensor to such a battery because it would serve no function, there being nothing to measure.

One must bear in mind that "the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggest the

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desirability of the combination". In re Mills, 16 USPQ2d 1430 (Fed. Cir. 1990). Clearly, Cheiky does not suggest the desirability of the proposed combination because it has no electrolyte levels to be measured. Applicant further notes that one of the three criteria necessary to establish a *prima facie* case of obviousness requires that there be some suggestion or motivation to modify the reference or combine the reference teachings. Clearly, there is no motivation to add an electrolyte level sensor to a battery which does not have an electrolyte level to measure. Applicant contends, therefore, that the proposed combination of Cheiky and Findl fails to meet the requirements necessary to establish a *prima facie* case of obviousness because there is no motivation for combining an electrolyte level sensor with an electrolyte starved air-metal battery as taught in Cheiky.

Applicant further notes that even if the combination of Cheiky modified by Findl were proper (which it is not), all recitations of Claim 1 would not be taught or suggested. This is another of the criteria required to establish a *prima facie* case of obviousness which is not met by the cited references. Claim 1 is drawn to a lead-acid type battery and recites that water is used to replenish its cells. As discussed above, Cheiky is a metal air battery to which an electrolyte is supplied.

Applicant contends that the cited references fail to meet the requirements necessary to establish a *prima facie* case of obviousness because there is no motivation for the proposed combination and the combination does not teach or suggest all claim recitations. Therefore, Claim 1 should be allowable over the cited references, and applicant requests that the rejection be withdrawn in view of the arguments presented above.

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Claims 2-16 depend, either directly or indirectly, upon Claim 1 and should be allowable for the same reasons that Claim 1 is allowable.

Claims 11-14

Claims 11-14 are rejected as obvious over Cheiky in view of Findl and further in view of Gutlich et al. The Examiner relies on Cheiky and Findl as teaching the recitations of Claim 1, (upon which Claims 11-14 depend) and further relies on Findl as teaching a charging sensor and Gutlich et al as teaching an air pump as recited in Claims 11-14. However, applicant need not address whether or not Findl and Gutlich et al teach these elements because it was shown that the combination of Cheiky and Findl fails to meet the requirements necessary to establish a *prima facie* case of obviousness for Claim 1 and, therefore, by logical extension, also fails to meet the criteria necessary to support an obviousness rejection of dependent Claims 11-14, since these claims also incorporate the recitation of Claim 1.

Claims 32 and 33

Claims 32 and 33 are drawn to a method of replenishing water to the cells of a lead-acid type battery. Claims 32 and 33 are rejected as obvious over Cheiky in view of Findl. Claim 32 recites, in relevant part, the step of sensing when the level of water in the battery is low, and Claim 33 recites, in relevant part, sensing when the level of water in the battery is adequate. As shown in the arguments presented above, however, for the metal-air battery disclosed in Cheiky, the steps of sensing an electrolyte level, either low or adequate, has no meaning since there is no level to be sensed in such a battery. Cheiky and Findl do not teach sensing electrolyte levels as recited in Claims 32 and 33 because there are no levels to be sensed and cannot, therefore, meet the requirements necessary to establish a *prima facie* case of obviousness because all claim recitations are not taught or

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suggested. Furthermore, one would not be motivated to combine Cheiky with Findl and to arrive at the method disclosed in Claims 32 and 33 because Cheiky discloses a battery which does not have electrolyte levels, but depends upon a flow of electrolyte from the cells for proper operation. Analogous to the arguments made above for Claim 1, one would not be motivated to sense electrolyte levels in a battery having no electrolyte levels to sense.

Summary

Applicant has demonstrated in the arguments presented above that the cited references fail to meet the criteria necessary to establish a *prima facie* case of obviousness in support of the rejections because there is no motivation for the proposed combination of references, and even when made, the combination fails to teach or suggest all claim recitations. Applicant contends that the claims, as amended, are allowable over the cited references and requests that the rejections be withdrawn and the application passed to issue.

Respectfully submitted,

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